

(2) *Microfiche.* For microfilming source documents or computer generated information (COM) on microfiche, the appropriate formats and reduction ratios prescribed in ANSI/AIIM MS5-1990 must be used as specified for the size and quality of the documents being filmed. See ANSI/AIIM MS23-1991 for determining the appropriate reduction ratio and format for meeting the image quality requirements.

(e) *Index placement*—(1) *Source documents.* When filming original (source) documents, all indexes, registers, or other finding aids, if microfilmed, shall be placed either in the first frames of the first roll of film or in the last frames of the last roll of film of a series or in the last frames of the last microfiche or microfilm jacket of a series.

(2) *COM.* Computer-generated microforms shall have the indexes following the data on a roll of film or in the last frames of a single microfiche, or the last frames of the last fiche in a series. Other index locations may be used only if dictated by special system constraints.

[55 FR 27436, July 2, 1990, as amended at 58 FR 49195, Sept. 22, 1993; 60 FR 13908, Mar. 15, 1995]

#### § 1230.14 Film and image requirements for permanent records or unscheduled records.

(a) *Application.* The following standards apply to the microfilming of permanent records where the original paper record will be destroyed or otherwise disposed of. Systems that produce original permanent records on microfilm with no paper originals, such as computer output microfilm (COM), must be designed so that they produce microfilm which meets the standards of this section. Unscheduled records from systems such as COM must also meet the standards of this section. Prior NARA approval of a SF 115 is required before unscheduled paper records are disposed of after microfilming.

(b) *Film stock standards.* Only polyester-based silver gelatin type film that conforms to ANSI/NAPM IT9.1-1992 for LE 500 film must be used in all applications.

(c) *Processing standards.* Microforms shall be processed so that the residual thiosulfate ion concentration will not exceed 0.014 grams per square meter in accordance with ANSI/NAPM IT9.1-1992. Processing shall be in accordance with processing procedures in ANSI/AIIM MS1-1988 and MS23-1991.

(d) *Quality standards*—(1) *Resolution*—

(i) *Source documents.* The method for determining minimum resolution on microforms of source documents shall conform to the Quality Index Method for determining resolution and anticipated losses when duplicating as described in ANSI/AIIM MS23-1991 and MS43-1988. Resolution tests shall be performed using a NIST-SRM 1010a, Microcopy Resolution Test Chart (a calibrated and certified photographic reproduction) as specified in ISO 3334-1991 (the standard practice for using the test chart), and the patterns will be read following the instructions of ISO 3334-1991. The character used to determine the height used in the Quality Index formula shall be the smallest character used to display information. A Quality Index of five is required at the third generation level.

(ii) *COM.* Computer output microforms (COM) shall meet the requirements of ANSI/AIIM MS1-1988.

(2) *Background density of images.* The background ISO standard visual diffuse transmission density on microforms shall be appropriate to the type of documents being filmed. The procedure for density measurement is described in ANSI/AIIM MS23-1991 and the densitometer shall be in accordance with ANSI/ISO 5/3-1984, for spectral conditions and ANSI IT2.19-1990, for geometric conditions for transmission density. Recommended visual diffuse transmission background densities for images of documents are as follows:

Classification	Description of document	Background density
Group 1	High-quality, high-contrast printed books, periodicals, and black typing.	1.3-1.5
Group 2	Fine-line originals, black opaque pencil writing, and documents with small high-contrast printing.	1.15-1.4
Group 3	Pencil and ink drawings, faded printing, and very small printing, such as footnotes at the bottom of a printed page.	1.0-1.2

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Classi- fication	Description of document	Back- ground density
Group 4	Low-contrast manuscripts and drawings, graph paper with pale, fine-colored lines; letters typed with a worn ribbon; and poorly printed, faint documents.	0.8–1.0

Classi- fication	Description of document	Back- ground density
Group 5	Poor-contrast documents (special exception).	0.7–0.85

Recommended visual diffuse transmission densities for computer generated images are as follows:

Film type	Process	Density measurement method	Min. Dmax*	Max. Dmin*	Min- imum density dif- ference
Silver gelatin .....	Conventional .....	Printing or diffuse .....	0.75	0.15	0.60
Silver gelatin .....	Full reversal .....	Printing .....	1.50	0.20	1.30

\*Character or line density, measured with a microdensitometer or by comparing the film under a microscope with an image of a known density.

(3) *Base plus fog density of films.* The base plus fog density of unexposed, processed films should not exceed 0.10. When a tinted base film is used, the density will be increased. The difference must be added to the values given in the tables in paragraph (d)(2) of this section.

(4) *Line or Stroke Width.* Due to optical limitations in most photographic systems, film images of thin lines appearing in the original document will tend to fill in as a function of their width and density. Therefore, as the reduction ratio of a given system is increased, the background density shall be reduced as needed to ensure that the copies produced will contain legible characters.

[55 FR 27436, July 2, 1990, as amended at 58 FR 49195, Sept. 22, 1993]

**§ 1230.16 Film and image requirements for temporary records, duplicates, and user copies.**

(a) *Temporary records with a retention period over 99 years.* Agencies must follow the film and image requirements in § 1230.14.

(b) *Other temporary records.* Agencies must select an appropriate film stock that meets agency needs for temporary microforms to be kept for less than 100 years and ensures the preservation of the microforms for their full retention period. NARA does not require use of particular standards for processing

microfilm of such temporary records; agencies may consult appropriate ANSI standards or manufacturer's instructions.

[58 FR 49196, Sept. 22, 1993]

**Subpart D—Standards for the Storage, Use and Disposition of Microform Records**

SOURCE: 55 FR 27438, July 2, 1990, unless otherwise noted.

**§ 1230.20 Storage.**

(a) *Permanent and unscheduled records.* The extended term storage conditions specified in ANSI IT9.11–1991 and ANSI IT9.2–1991 are required for storing permanent and unscheduled microform records, except that the relative humidity of the storage area must be a constant 35% RH, plus or minus 5%. Non-silver copies of permanent or unscheduled microforms must not be stored in the same storage area as silver gelatin originals or duplicate copies.

(b) *Temporary records.* Temporary microform records must be stored under conditions that will ensure their preservation for their full retention period. Agencies may consult ANSI IT9.11–1991 and ANSI IT9.2–1991 to determine appropriate storage conditions; however, NARA does not require